

USSN 10/802,275

2

RECEIVED
CENTRAL FAX CENTER

APR 14 2008

Amendments to the Claims

Please amend claims 26, 29, and 34; without prejudice or disclaimer, as indicated in the following Listing of Claims.

Listing of Claims

1-25. (Cancelled)

26. (Currently amended) A fuel injector comprising:

a nozzle body forming a blind bore with a valve seating at a blind end of the blind bore;

a valve member that is moveable within the blind bore and that is engageable configured to engage with a the valve seating to control fuel delivery from the injector, the valve member being provided with an annular recess;

an amplifier arrangement having a piston member and a control chamber, the amplifier arrangement being hydraulically coupled to the valve member via the piston member and the control chamber, the piston member having a piston bore in which a further recess is provided;

an actuator arrangement coupled to the piston member; and

a mechanical coupler that is disposed between the piston member and the valve member, the mechanical coupler comprising a C-shaped spring that is received within the annular recess and that is arranged to cooperate with the further recess and that is configured so as to mechanically couple the piston member to the valve member during an initial retraction of the actuator and to mechanically de-couple the piston member from the valve member after completion of the initial retraction of the actuator; and

an actuator arrangement coupled to the piston member;

wherein whereby the actuator arrangement is adapted to apply applies an initial retracting force to the piston member during the initial retraction of the actuator arrangement while the valve member is mechanically coupled to, and, thus, constrained to move with, the piston member away from the valve seating; and

USSN 10/802,275

3

~~wherein whereby~~ the actuator ~~arrangement is also adapted to~~ subsequently ~~apply~~ applies a second retracting force to the piston member, while the valve member and the piston member are mechanically decoupled from, and may thus move relative to, one another.

27. (Original) A fuel injector, as set forth in claim 26, wherein the second retracting force is less than the initial retracting force.

28. (Withdrawn) A method for operating a fuel injector for delivering fuel from the injector having a valve member which is engageable with a valve seating to control fuel delivery from the injector; a hydraulic amplifier arrangement coupled to the valve member via a piston member and a control chamber, and an actuator arrangement coupled to the piston member, the method comprising the steps of:

applying an initial retracting force to the piston member to move the valve member away from the valve seating;

applying a second retracting force to the piston member after initial movement of the valve member,

mechanically coupling the valve member and the piston member during application of the initial retracting force and decoupling from one another during application of the second retracting force; and

hydraulically moving the valve member during application of the second retracting force.

29. (Currently amended) A fuel injector comprising:

a nozzle body forming a blind bore with a valve seat at a blind end of the blind bore;

a valve member engageable with said valve seat to control fuel flow, the valve member being provided with an annular recess;

an actuator-hydraulic amplifier combination including a piston member, the piston member being hydraulically coupled to the valve member via a control chamber and being adapted to retract said valve member out of engagement with said valve seat, the piston member having a piston bore in which a further recess is provided; and

a mechanical coupler disposed between the piston member and the valve member, the mechanical coupler, the mechanical coupler comprising a C-shaped spring that is received

USSN 10/802,275

4

within the annular recess and that is arranged to cooperate with the further recess configured so as to mechanically couple said valve member and said piston member together during an initial retracting movement of said valve member out of engagement with said valve seat, the actuator and hydraulic amplifier applying a force to the valve member through said mechanical coupler during said initial retracting movement;

wherein the mechanical coupler is further configured so as to mechanically decouple the piston member from the valve member after said initial retraction of said valve member such that said valve member is thereafter only hydraulically coupled to said piston member and is thus free to move relative to said piston member.

30. **(Previously Presented)** A fuel injector as set forth in claim 29 wherein said actuator-hydraulic amplifier combination includes an actuator for moving said piston member through said mechanical coupler and a hydraulic circuit for amplifying movement of said actuator to hydraulically move said valve member in proportion to movement of said actuator after said initial retracting movement.

31. **(Withdrawn)** A method of operating a fuel injector comprising the steps of:
applying a mechanical movement to a valve member for moving the valve member from engagement with a valve seat,
applying hydraulic pressure to the valve member in response to initial movement of the valve member from the valve seat,
amplifying the mechanical movement hydraulically and moving the valve member relative to the mechanical movement and proportionately to the mechanical movement.

32. **(Previously Presented)** A fuel injector, as set forth in claim 26, wherein the mechanical coupler includes a spring.

33. **(Previously Presented)** A fuel injector, as set forth in claim 29, wherein the mechanical coupler includes a spring.

USSN 10/802,275

5

34. (Currently amended) A fuel injector, comprising:

a nozzle body forming a blind bore;

a valve member that is moveable within the blind bore and that is engageable with a blind end of the blind bore to control fuel delivery through the fuel injector, the valve member being provided with an annular recess; and,

a piston member that is coupled to an actuator and that forms a control chamber, the piston member having a piston bore in which a further recess is provided; and,

a mechanical coupler that is disposed between the piston member and the valve member, the mechanical coupler comprising a C-shaped spring that is received within the annular recess and that is arranged to cooperate with the further recess and that is configured so as to mechanically couple the piston member and the valve member during application of an initial retracting force such that, in response to the initial retracting force, the valve member moves with the piston member and is disengaged from the blind end of the bore;

wherein the actuator is actuatable to apply both the initial retracting force and a second retracting force to the valve member through the piston member, the mechanical coupler, and the control chamber;

~~wherein~~ whereby the mechanical coupler, the piston member and the control chamber apply the initial retracting force and the second retracting force to the valve member in response to actuation of the actuator; and

~~wherein~~ whereby, during subsequent application of the second retracting force, the piston member and the valve member are mechanically de-coupled such that the piston member and valve member are only hydraulically coupled and may thus move relative to one another.